

ABSTRACT OF THE DISCLOSURE

A method of making a heterojunction bipolar transistor comprises the steps of: forming a mask layer on a compound semiconductor film by using a photomask for forming an emitter; and forming the emitter by wet-etching the compound semiconductor film by using the mask layer. The photomask has a pattern thereon for forming the emitter. The pattern is defined by a first area R associated with the shape of the emitter to be formed, and a plurality of second areas T<sub>1</sub> to T<sub>4</sub>. Each of the second areas T<sub>1</sub> to T<sub>4</sub> includes first and second sides S<sub>1</sub> and S<sub>2</sub> meeting each other to form an acute angle therebetween, and a third side S<sub>3</sub> in contact with the first area R. In each of the second areas T<sub>1</sub> to T<sub>4</sub>, one side S<sub>3</sub> of the two sides meeting each other to form a right angle therebetween is in contact with one side of the area R, whereas the other side S<sub>1</sub> is connected to another side of the first area R to form a line segment. Using this photomask, an etching mask is arranged such that a side S<sub>11</sub> of the first area R is oriented in [011] direction of the emitter crystal film. When the emitter crystal film is etched by use of the etching mask, a rectangular emitter is obtained.

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